WHAT IS CLAIMED IS:

1.   A physiological characteristic monitor, comprising:

an input device capable of receiving a signal from a sensor, the signal being based on a sensed physiological characteristic value of a user; and

a processor for analyzing the received signal; wherein the processor determines a dynamic behavior of the physiological characteristic value; and

provides an observable indicator based upon the dynamic behavior of the physiological characteristic value so determined.

2.   The physiological characteristic monitor of claim 1, wherein the physiological characteristic value is a measure of the concentration of blood glucose in the user.

3.   The physiological characteristic monitor of claim 1, wherein analyzing the received signal and determining a dynamic behavior includes repeatedly measuring the physiological characteristic value to obtain a series of physiological characteristic values and analyzing a rate of change of the physiological characteristic value over time from the series of physiological characteristic values.

4.   The physiological characteristic monitor of claim 3, wherein each of the series of physiological characteristic values includes a smoothing filtered group of repeated physiological characteristic value readings.

5.   The physiological characteristic monitor of claim 3, wherein a slope of a line fit to the series of physiological characteristic values is calculated if a most recent of the series of physiological characteristic values is within a qualifying range.

6.   The physiological characteristic monitor of claim 5, wherein the slope is negative.

7.   The physiological characteristic monitor of claim 3, wherein the indicator includes a warning alarm; and wherein the warning alarm is responsive to the dynamic behavior profile of the physiological characteristic value.

1   8.   The physiological characteristic monitor of claim 7, wherein the physiological
2   characteristic value is a measure of the concentration of blood glucose in the user.

1   9.   The physiological characteristic monitor of claim 8, wherein the warning
2   alarm announces an anticipated glucose crash.

1   10.   The physiological characteristic monitor of claim 3, wherein the series of
2   physiological characteristic values spans a time period of approximately ten minutes.

1   11.   The physiological characteristic monitor of claim 5, wherein the indicator
2   includes an alarm warning of anticipated low glucose levels.

1   12.   The physiological characteristic monitor of claim 5, wherein the series of
2   physiological characteristic values spans a time period of approximately thirty minutes.

1   13.   The physiological characteristic monitor of claim 5, wherein the indicator is
2   provided if the slope is steeper than a threshold rate.

1   14.   The physiological characteristic monitor of claim 13, wherein the threshold
2   rate is approximately 3% per minute and the qualifying range is approximately 100 to 150
3   mg/dL.

1   15.   The physiological characteristic monitor of claim 13, wherein the threshold
2   rate is approximately 1% per minute and the qualifying range is approximately 60 to 140
3   mg/dL.

1   16.   The physiological characteristic monitor of claim 3, wherein an anticipated
2   physiological characteristic value is determined from an extrapolated curve based upon the
3   series of physiological characteristic values.

1   17.   The physiological characteristic monitor of claim 16, wherein the indicator
2   includes a warning of an anticipated morning glucose incident.

1   18.   The physiological characteristic monitor of claim 16, wherein the series of
2   physiological characteristic values spans a time period of approximately one hour.

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1   19.   The physiological characteristic monitor of claim 16, wherein the extrapolated

2 curve is determined from a slope of a line fit to the series of physiological characteristic

3 values and an average of the series of physiological characteristic values.

1   20.   The physiological characteristic monitor of claim 16, wherein the anticipated

2 physiological characteristic value is determined approximately three hours before an

3 anticipated wakeup time.

1   21.   The physiological characteristic monitor of claim 16, wherein the indicator is

2 provided if the anticipated value exceeds a qualifying range.

1   22.   The physiological characteristic monitor of claim 21, wherein the qualifying

2 range is approximately 60 mg/dL to 126 mg/dL.

1   23.   The physiological characteristic monitor of claim 3, wherein a slope of a line

2 fit to the series of physiological characteristic values is calculated if a most recent of the

3 series of physiological characteristic values exceeds a threshold value.

1   24.   The physiological characteristic monitor of claim 23, wherein the slope is

2 positive.

1   25.   The physiological characteristic monitor of claim 23, wherein the indicator

2 includes a warning of an anticipated hyperglycemic incident.

1   26.   The physiological characteristic monitor of claim 23, wherein the series of

2 physiological characteristic values spans a time period of approximately thirty minutes.

1   27.   The physiological characteristic monitor of claim 23, wherein the indicator is

2 provided if the slope is steeper than a threshold rate.

1   28.   The physiological characteristic monitor of claim 27, wherein the threshold

2 rate is approximately 3% per minute and the threshold value is approximately 180 mg/dL.

1   29.   A method of monitoring a physiological characteristic value, comprising the

2 steps of:

3   receiving a signal from a sensor, the signal being based on a physiological

4 characteristic value of a user;

5   analyzing the received signal and determining a dynamic behavior of the

6 physiological characteristic value; and

7   providing an indicator based upon the dynamic behavior of the physiological

8 characteristic value.

1   30.   The method of claim 29, wherein the physiological characteristic value is a

2 glucose level.

1   31.   The method of claim 29, wherein analyzing the received signal and

2 determining a dynamic behavior includes measuring the physiological characteristic value to

3 obtain a series of physiological characteristic values and analyzing a rate of change of the

4 physiological characteristic over time value from the series of physiological characteristic

5 values.

1   32.   The method of claim 31, wherein each of the series of physiological

2 characteristic values includes a smoothing filtered group of repeated physiological

3 characteristic value readings.

1   33.   The method of claim 31, wherein a slope of a line fit to the series of

2 physiological characteristic values is calculated if a most recent of the series of physiological

3 characteristic values is within a qualifying range.

1   34.   The method of claim 33, wherein the slope is negative.

1   35.   The method of claim 31, wherein the indicator includes a warning alarm;

2 wherein the warning alarm is responsive to the dynamic behavior profile of the physiological

3 characteristic value.

1   36.   The method of claim 35, wherein the wherein the physiological characteristic

2 value is a measure of the concentration of blood glucose in the user.

1   37.   The method of claim 36, wherein the warning alarm announces an anticipated

2 glucose crash.

1   38.   The method of claim 33, wherein the series of physiological characteristic

2 values spans a time period of approximately ten minutes.

1   39.   The method of claim 33, wherein the indicator includes a warning of

2 anticipated low glucose.

1   40.   The method of claim 33, wherein the series of physiological characteristic

2 values spans a time period of approximately thirty minutes.

1   41.   The method of claim 33, wherein the indicator is provided if the slope is

2 steeper than a threshold rate.

1   42.   The method of claim 41, wherein the threshold rate is approximately 3% per

2 minute and the qualifying range is approximately 100 to 150 mg/dL.

1   43.   The method of claim 41, wherein the threshold rate is approximately 1% per

2 minute and the qualifying range is approximately 60 to 140 mg/dL.

1   44.   The method of claim 31, wherein an anticipated physiological characteristic

2 value is determined from an extrapolated curve based upon the series of physiological

3 characteristic values.

1   45.   The method of claim 44, wherein the indicator includes a warning of an

2 anticipated morning glucose incident.

1   46.   The method of claim 44, wherein the series of physiological characteristic

2 values spans a time period of approximately one hour.

1   47.   The method of claim 44, wherein the extrapolated curve is determined from a

2 slope of a line fit to the series of physiological characteristic values and an average of the

3 series of physiological characteristic values.

1   48.   The method of claim 44, wherein the anticipated physiological characteristic

2   value is determined approximately three hours before an anticipated wakeup time.

1   49.   The method of claim 44, wherein the indicator is provided if the anticipated

2   value exceeds a qualifying range.

1   50.   The method of claim 49, wherein the qualifying range is approximately 60

2   mg/dL to 126 mg/dL.

1   51.   The method of claim 31, wherein a slope of a line fit to the series of

2   physiological characteristic values is calculated if a most recent of the series of physiological

3   characteristic values exceeds a threshold value.

1   52.   The method of claim 51, wherein the slope is positive.

1   53.   The method of claim 51, wherein the indicator includes a warning of an

2   anticipated hyperglycemic incident.

1   54.   The method of claim 51, wherein the series of physiological characteristic

2   values spans a time period of approximately thirty minutes.

1   55.   The method of claim 51, wherein the indicator is provided if the slope is

2   steeper than a threshold rate.

1   56.   The method of claim 55, wherein the threshold rate is approximately 3% per

2   minute and the threshold value is approximately 180 mg/dL.

1   57.   A physiological characteristic monitor, comprising:

2   an input device capable of receiving a signal from a sensor, the signal being based

3   on a physiological characteristic value of a user; and

4   a processor capable of analyzing the received signal and providing multiple

5   alarms each based upon different conditions associated with the physiological

6   characteristic value of the user.

1   58.   The physiological characteristic monitor of claim 57, wherein the multiple
2   alarms are distinguishable from each other.

1   59.   The physiological characteristic monitor of claim 57, wherein the multiple
2   alarms include signals selected from the group consisting of audible signals, visual
3   signals, tactile signals and displays.

1   60.   The physiological characteristic monitor of claim 57, wherein the
2   processor determines a physiological characteristic value from the received signal and the
3   multiple alarms are based upon the physiological characteristic value.

1   61.   The physiological characteristic monitor of claim 60, wherein each of the
2   multiple alarms are triggered if the physiological characteristic value exceeds its
3   associated threshold value.

1   62.   The physiological characteristic monitor of claim 60, wherein one of a
2   first pair of the multiple alarms is triggered when a narrow range of physiological
3   characteristic values is exceeded, and wherein the first pair of the multiple alarms are
4   each associated with a first upper threshold value and a first lower threshold value,
5   respectively.

1   63.   The physiological characteristic monitor of claim 62, wherein one of a
2   second pair of the multiple alarms is triggered by exceeding a wide range of
3   physiological characteristic values, and wherein the second pair of the multiple alarms
4   are each associated with a second upper threshold value and a second lower threshold
5   value, respectively.

1   64.   A method of providing alarms for a physiological characteristic monitor,

2   comprising the steps of:

3   receiving a signal from a sensor, the signal being based on a physiological

4   characteristic value of a user;

5   analyzing the received signal; and

6   providing multiple alarms, where each of the multiple alarms is based upon a

7   different physiological status or condition associated with the physiological characteristic

8   value of the user.

1   65.   The method of claim 64, wherein the multiple alarms are distinguishable

2   from each other.

1   66.   The method of claim 64, wherein the multiple alarms include signals

2   selected from the group consisting of audible signals, visual signals, tactile signals and

3   displays.

1   67.   The method of claim 64, wherein the processor determines a physiological

2   characteristic value from the received signal and the multiple alarms are based upon the

3   physiological characteristic value.

1   68.   The method of claim 67, wherein each of the multiple are triggered if the

2   physiological characteristic value exceeds an associated threshold value.

1   69.   The method of claim 67, wherein one of a first pair of the multiple alarms

2   is triggered by exceeding a narrow range of physiological characteristic values and

3   wherein the first pair of the multiple alarms are each associated with a first upper

4   threshold value and a first lower threshold value, respectively.

1   70.   The method of claim 69, wherein one of a second pair of the multiple

2   alarms is triggered by exceeding a wide range of physiological characteristic values

3   wherein the second pair of the multiple alarms are each associated with a second upper

4   threshold value and a second lower threshold value, respectively.

1 71. A physiological characteristic monitor, comprising:

2 an input device capable of receiving a signal from a sensor, the signal being based

3 on a physiological characteristic value of a user; and

4 a processor for analyzing the received signal;

5 initiating a timer based upon a conditions associated with the physiological

6 characteristic value of the user;

7 and providing a reminder to the user following expiration of the timer.

1 72. The physiological characteristic monitor of claim 71, wherein the

2 reminder includes an alarm signal selected from the group consisting of an audible signal,

3 a visual signal, a tactile signal and a display.

1 73. The physiological characteristic monitor of claim 71, wherein a duration

2 of the timer is preset based upon the initiating condition.

1 74. The physiological characteristic monitor of claim 71, wherein the

2 condition is that an event marker is entered into the monitor.

1 75. The physiological characteristic monitor of claim 74, wherein the event

2 marker is selected from the group consisting of a meal marker, an exercise marker, a high

3 blood glucose marker and a low blood glucose marker.

1 76. The physiological characteristic monitor of claim 71, wherein the

2 condition is that a reference value is entered into the monitor and the reminder indicates

3 that a new reference value should be entered.

1 77. The physiological characteristic monitor of claim 71, wherein the

2 processor determines a physiological characteristic value from the received signal and the

3 condition based upon the physiological characteristic value.

1 78. The physiological characteristic monitor of claim 77, wherein the

2 condition is that the physiological characteristic value exceeds a threshold value.

1   79.   A method of triggering a reminder to a user of a physiological

2   characteristic monitor, comprising the steps of:

3   receiving a signal from a sensor, the signal being based on a physiological

4   characteristic value of a user; and

5   analyzing the received signal and initiating a timer based upon a conditions

6   associated with the physiological characteristic value of the user; and

7   providing a reminder to the user following expiration of the timer.

1   80.   The method of claim 79, wherein the reminder includes an alarm signal

2   selected from the group consisting of an audible signal, a visual signal, a tactile signal

3   and a display.

1   81.   The method of claim 79, wherein a duration of the timer is preset based

2   upon the initiating condition.

1   82.   The method of claim 79, wherein the condition is that an event marker is

2   entered into the monitor.

1   83.   The method of claim 82, wherein the event marker is selected from the

2   group consisting of a meal marker, an exercise marker, a high blood glucose marker and

3   a low blood glucose marker.

1   84.   The method of claim 79, wherein the condition is that a reference value is

2   entered into the monitor and the reminder indicates that a new reference value should be

3   entered.

1   85.   The method of claim 79, wherein the processor determines a physiological

2   characteristic value from the received signal and the condition based upon the

3   physiological characteristic value.

1   86.   The method of claim 85, wherein the condition is that the physiological

2   characteristic value exceeds a threshold value.

1   87.   A physiological characteristic monitor, comprising:

2   an input device capable of receiving a signal from a sensor, the signal being based

3   on a physiological characteristic value of a user; and

4   a processor for analyzing the received signal and determining physiological

5   characteristic value data of the user from the received signal;

6   a memory for storing the physiological characteristic value data of the user; and

7   a display for providing a retrospective display of the physiological characteristic

8   value data.

1   88.   The physiological characteristic monitor of claim 87, wherein the stored

2   physiological characteristic value data includes a minimum and maximum blood glucose

3   value and the retrospective display shows the minimum and maximum blood glucose

4   value with a respective time and date.

1   89.   The physiological characteristic monitor of claim 87, wherein the stored

2   physiological characteristic value data includes a first number of excursions above an

3   upper blood glucose value and a second number of excursions below a lower blood

4   glucose value and the retrospective display shows the first and second number.

1   90.   The physiological characteristic monitor of claim 87, wherein the stored

2   physiological characteristic value data includes a distribution of blood glucose values and

3   the retrospective display shows a first portion of the blood glucose values above an upper

4   blood glucose value, a second portion of the blood glucose values below a lower blood

5   glucose value and a third portion of the blood glucose values between the upper value

6   and the lower value.

1   91.   The physiological characteristic monitor of claim 90, wherein the first,

2   second and third portions are shown as percentages.

1   92.   The physiological characteristic monitor of claim 90, wherein the first,

2   second and third portions are shown as times.

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1   93.   The physiological characteristic monitor of claim 90, wherein the first,

2 second and third portions are shown as numbers of readings.

1   94.   The physiological characteristic monitor of claim 90, wherein the display

2 includes a total time for the physiological characteristic value data.

1   95.   The physiological characteristic monitor of claim 90, wherein the display

2 includes a total number of readings for the physiological characteristic value data.

1   96.   The physiological characteristic monitor of claim 90, wherein the first

2 portion and the second portion are shown as integrated values.

1   97.   The physiological characteristic monitor of claim 96, wherein the

2 integrated values are based on the sums of magnitude differences from the upper blood

3 glucose value and the lower blood glucose value for the first and second portion,

4 respectively.

1   98.   The physiological characteristic monitor of claim 96, wherein integrated

2 values are divided by a respective duration of sensor use.

1   99.   A method of displaying physiological characteristic value data,

2 comprising the steps of:

3   receiving a signal from a sensor, the signal being based on a physiological

4 characteristic value of a user; and

5   analyzing the received signal and determining physiological characteristic value

6 data of the user from the received signal;

7   storing the physiological characteristic value data of the user; and

8   showing a retrospective display of the physiological characteristic value data.

1   100.   The method of claim 99, wherein the stored physiological characteristic

2 value data includes a minimum and maximum blood glucose value and the retrospective

3 display shows the minimum and maximum blood glucose value with a respective time

4 and date.

1   101.   The method of claim 99, wherein the stored physiological characteristic

2   value data includes a first number of excursions above an upper blood glucose value and

3   a second number of excursions below a lower blood glucose value and the retrospective

4   display shows the first and second number.

1   102.   The method of claim 99, wherein the stored physiological characteristic

2   value data includes a distribution of blood glucose values and the retrospective display

3   shows a first portion of the blood glucose values above an upper blood glucose value, a

4   second portion of the blood glucose values below a lower blood glucose value and a third

5   portion of the blood glucose values between the upper value and the lower value.

1   103.   The method of claim 102, wherein the first, second and third portions are

2   shown as percentages.

1   104.   The method of claim 102, wherein the first, second and third portions are

2   shown as times.

1   105.   The method of claim 102, wherein the first, second and third portions are

2   shown as numbers of readings.

1   106.   The method of claim 102, wherein the display includes a total time for the

2   physiological characteristic value data.

1   107.   The method of claim 102, wherein the display includes a total number of

2   readings for the physiological characteristic value data.

1   108.   The method of claim 102, wherein the first portion and the second portion

2   are shown as integrated values.

1   109.   The method of claim 108, wherein the integrated values are based on the

2   sums of magnitude differences from the upper blood glucose value and the lower blood

3   glucose value for the first and second portion, respectively.

1   110. The method of claim 108, wherein integrated values are divided by a

2 respective duration of sensor use.